



Attorney Docket No. 48699-CPA (1360)

#14/1745
D. Kakita
11/4/01
[Signature]

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Sato, H.

EXAMINER: Chaney, C.

SERIAL NO.: 09/155,635

GROUP: 1745

FILED: July 9, 1999

FOR: LITHIUM ION SECONDARY BATTERY

Assistant Commissioner for Patents
Washington, D.C. 20231

CERTIFICATE OF MAILING

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231 on December 20, 2000.

By:

Carmela L Feeley
Carmela L. Feeley

DECLARATION UNDER RULE 132

Sir:

REMARKS

Further to the Preliminary Amendment that was filed on December 6, 2000, attached hereto is a Declaration of Dr. Hideharu Sato, dated December 8, 2000, in which he reports that he measured the average particle sizes and specific surface areas of LONZA KS series graphites disclosed in the prior art references relied upon in the Office Actions dated June 20, 2000 and November 11, 1999. The results of Dr. Sato's measurements are shown below.

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Table 1 lists the results of Dr. Sato's measurements for different LONZA KS series graphites. The Figure on page 4 of the Declaration is a plot of the tabulated data presented in Table 1 as well as data for graphites satisfying claim 1 according to the present invention. As seen from Table 1 and the Figure of the Declaration, the relationship of particle size and specific surface area of LONZA KS graphite (upper curve, ○) is completely different from the relationship of particle size and specific surface area of graphites satisfying claim 1 of the present invention (lower curve, ▼, and area below lower curve, ●).

Table 1

	Particle size	Specific Surface Area
LONZA KS 6	4.9 μm	22.0 m^2/g
LONZA KS 15	8.0 μm	13.5 m^2/g
LONZA KS 25	10.1 μm	11.9 m^2/g
LONZA KS 44	17.5 μm	9.2 m^2/g
LONZA KS 75	23.7 μm	7.2 m^2/g

Table 2 lists the results of Dr. Sato's measurements for different samples of the same lot of LONZA KS 25 differing by shipment date. Applicants note that the measurements are nearly identical suggesting very little deviation of particle size and specific surface area in the same lot of LONZA KS 25.

Table 2

Grade	LONZA KS 25	
Lot No.	G-287	G-287
Shipment date	February 5, 1993	June 28, 1995
BET surface area (m ² /g)	11.9	11.9
Particle Size (μm)	10.1	10.0

Table 3 lists the results of Dr. Sato's measurements for LONZA KS 15 and LONZA KS 44 originating in different production lots. **None** of the four lots of LONZA KS 44 and neither of the two lots of LONZA KS 15 satisfied formula (II) or the conditions of claim 1 of the present invention. Further, it is clear from the measurements reported in Table 3 that there is little deviation of particle size and specific area from lot to lot, e.g., the lot-to-lot deviation in particle size and specific surface area is about 10 %.

Table 3

Grade	LONZA KS 15		LONZA KS 44			
Lot No.	G-346	H-258	H-036	G-148	I-066B	L-041B
BET surface area (m ² /g)	13.7	13.4	9.5	8.4	9.2	9.1
Particle Size (μm)	8.0	8.0				

The measurements presented in Tables 1, 2 and 3, and the Figure on page 4 of the Declaration attached hereto clearly prove that graphite materials satisfying claim 1



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of the present invention are completely different from the graphite materials disclosed in the prior art. Therefore, none of the prior art references anticipated the claims of the present invention and the § 102 rejections should be withdrawn.

It is respectfully submitted that the subject application is in condition for allowance. Early and favorable action is requested.

Applicants believe that additional fees are not required for consideration of the within Response. However, if for any reason a fee is required, a fee paid is inadequate or credit is owed for any excess fee paid, you are hereby authorized and requested to charge Deposit Account No. **04-1105**.

Respectfully submitted,
EDWARDS & ANGELL

Date: December 20, 2000

By: 

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF:

Hideharu SATO

SERIAL NO. 09/155,635

GROUP ART UNIT: 1745

EXAMINER: Carol Chaney

FOR: LITHIUM ION SECONDARY BATTERY

DECLARATION UNDER 37 C.F.R. 1.132

HONORABLE COMMISSIONER OF PATENTS & TRADEMARKS
WASHINGTON, D.C. 20231

SIR:

Now comes Hideharu SATO, a citizen of Japan, and a resident of c/o Mitsubishi Chemical Corporation, Tsukuba Research Center, 3-1, Chuo 8-chome, Amicho, Inashiki-gun, Ibaraki-ken, Japan, who declares and says that:

1. received a doctor's degree in engineering from Tokyo Institute of Technology in March, 1995.

2. I have been employed by Mitsubishi Chemical Corporation since April 1995; and was engaged in the study of negative electrode for lithium ion secondary battery.

3. I am one of the inventors of U.S. Patent Application, Serial No. 09/155,635.

4. I have read the Office Action dated October 18, 1999, have understood the Examiner's rejection of the invention

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claimed in the above application. Then, the following experiments for LONZA KS 6, 15, 25, 44 and 75 graphites were conducted.

(1) Measurement of particle size of LONZA KS 6, 15, 25, 44 and 75:

Particle size determination was made by using a laser diffraction type particle size analyzer (Horiba LA-700, manufactured by HORIBA, LTD.). The automatically calculated average particle size was used as standard of evaluation.

(2) Measurement of specific surface area of LONZA KS 6, 15, 25, 44 and 75:

The specific surface area was measured according to the BET one-point method by using Autosorb AMS-8000 manufactured by Ohkura-Riken Co., Ltd. (absorbing nitrogen gas).

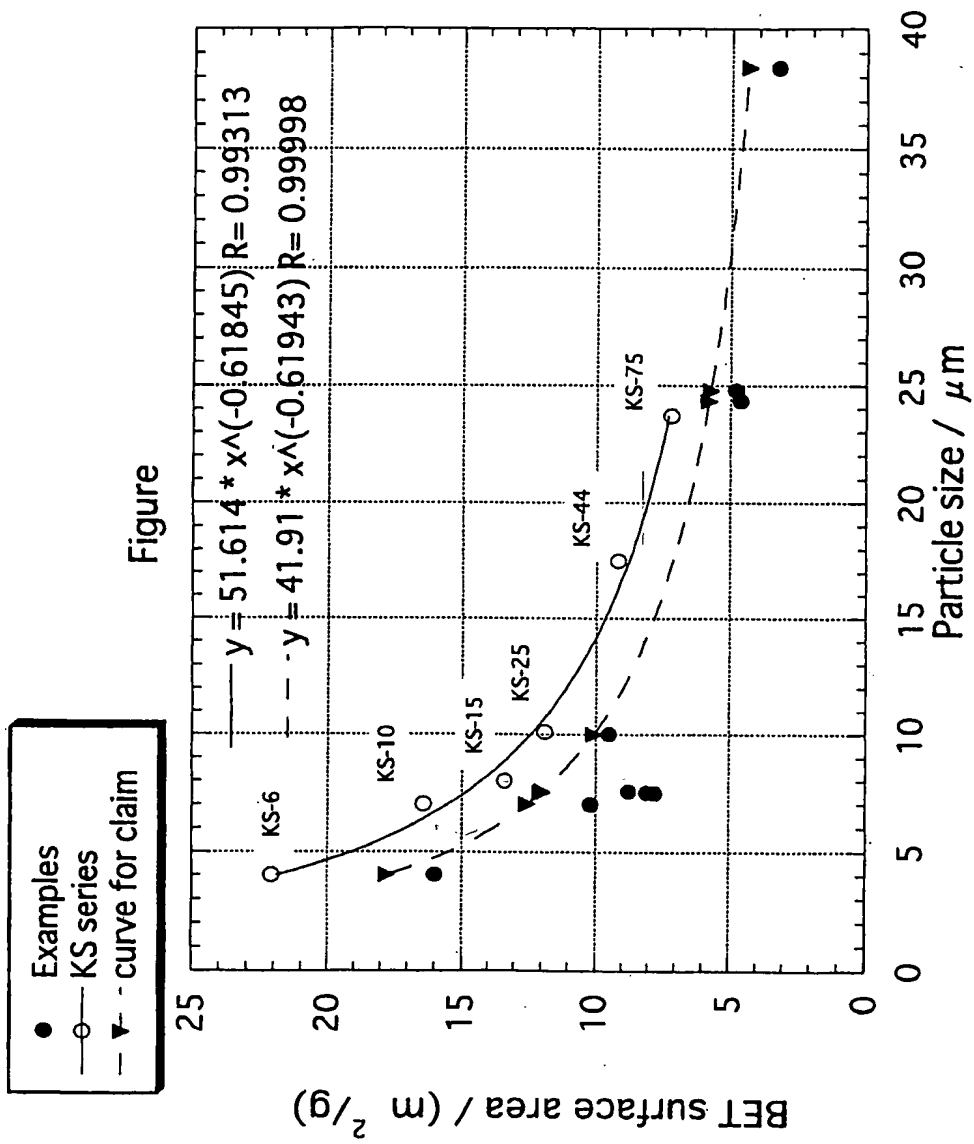
The results are shown in the following Table 1.

Table 1

	Particle size	Specific surface area
LONZA KS 6	4.9 μm	22.0 m^2/g
LONZA KS 15	8.0 μm	13.5 m^2/g
LONZA KS 25	10.1 μm	11.9 m^2/g
LONZA KS 44	17.5 μm	9.2 m^2/g
LONZA KS 75	23.7 μm	7.2 m^2/g

The values shown in Table 1 are collectively shown in the following figure. Also, the particle sizes and specific surface areas of graphite used in Examples of the present invention are collectively shown in the following figure.

In the figure, the results of the above LONZA KS series are plotted as "○". Also, the results of Example in the present invention and the point on the curve satisfying claim 1 according to the present invention are plotted as "●" and "▼", respectively.



(3) Deviation of particle size and specific surface area of LONZA KS 15, 25 and 44

In LONZA KS 25, the deviation of particle size and specific surface area in one lot (same lot No, but difference transportation date) were determined. The measurements of particle size and specific surface area were conducted by the same way mentioned above. The results are shown in the following Table 2. The following two samples of LONZA KS 25 were different in the shipment date only.

Table 2

Grade	KS 25	
Lot No.	G-287	G-287
Shipment date	February 5, 1993	June 28, 1995
BET surface are (m ² /g)	11.9	11.9
Particle size (μm)	10.1	10.0

In LONZA KS 15 and 44, the deviation of particle size and specific surface area in some lots were determined. The measurements of particle size and specific surface area were conducted by the same way mentioned above. The results are shown in the following Table 2.

Table 3

Grade	KS 15		KS 44			
Lot No.	G-346	H-258	H-036	G-148	I-066B	L-041B
BET surface area (m ² /g)	13.7	13.4	9.5	8.4	9.2	9.1
Particle size (μm)	8.0	8.0	19.0	16.0	17.5	18.8

(4) Remarks

As seen from the above figure, the relationship of particle sizes and specific surface areas of LONZA KS graphite series is represented by the following formula determined by the least squares approach.

$$y=51.614x^{(-0.61845)}$$

On the other hand, the relationship of particle sizes and specific surface areas in the present invention is represented by the following formula.

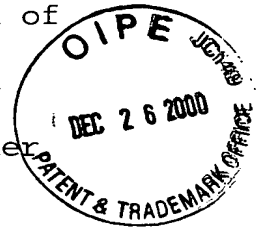
$$y=42x^{(-0.6)}$$

Therefore, the relationship of particle sizes and specific surface areas of LONZA KS graphite series is completely different from that of graphite used in Examples of the present invention.

Further, as seen from Table 2, it is clearly understood that there is little deviation of particle size and specific surface area in one lot.

Still further, as seen from Table 3, it is clearly understood that all data in both LONZA KS 15 and 44 are present in the upper region than the formula of $y=42x^{(-0.6)}$. Therefore, the relationship of particle size and specific surface area in LONZA KS graphite series is not within the scope of claim 1 according to the present invention even though the different lot No thereof is used.

5. I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

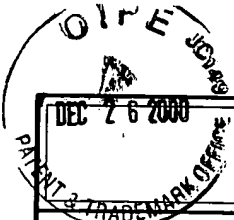


6. Further, deponent saith not.

Date: December 8, 2000

Hideharu Sato
Hideharu SATO

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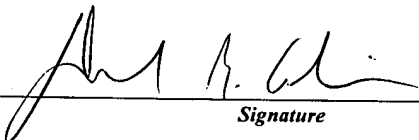
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TRANSMITTAL LETTER
(General - Patent Pending)Docket No.
48,699-CPA (1360)In Re Application Of: **Hideharu Sato**Serial No.
09/155,635Filing Date
July 9, 1999Examiner
C. ChaneyGroup Art Unit
1745Title: **LITHIUM ION SECONDARY BATTERY**TO THE ASSISTANT COMMISSIONER FOR PATENTS:

Transmitted herewith is: a Declaration Under 37 C.F.R. 1.132 and any related documents.

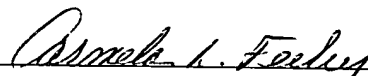
in the above identified application.

- ☒ No additional fee is required.
- ☐ A check in the amount of _____ is attached.
- ☐ The Assistant Commissioner is hereby authorized to charge and credit Deposit Account No. _____ as described below. A duplicate copy of this sheet is enclosed.
- ☐ Charge the amount of _____
- ☒ Credit any overpayment.
- ☒ Charge any additional fee required.

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SignatureDated: **December 20, 2000**

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20231.



Signature of Person Mailing Correspondence

Carmela L. Feeley

Typed or Printed Name of Person Mailing Correspondence

cc: